atic study, with its fine plate drawn on stone by the author himself, is a good example of how the microscope ought to be used. Microscopists will be similarly interested in the study of the structure of the tongue of the honey bee, by Prof. J. D. Hyatt, in the last, July, number of the *Amer. Quar. Mic. Journal.*

MANDIBLES OF ANTS WORN BLUNT BY USE.—"Much interest has lately been developed, in the Cambridge Entomological Club and in the Entomological Section of the Boston Society of Natural History, by discussions which owe their origin to the statement published by Rev. H. C. McCook, that the mandibles of ants are worn off and become blunted by the labor which they perform. It has been thought that Mr. McCook was mistaken, that the chitin of the mouth parts of insects remained as it had been upon emergence from the chrysalis, and that the forms of mandibles observed by Mr. McCook were monstrosities. In confirmation of the wearing away of mandibles, Mr. E. P. Austin exhibited, at the last meeting of the Entomological Section of the Boston Society of Natural History, nearly a hundred specimens of *Pasimachus*, in which all the fresh, bright-looking specimens had perfectly-shaped sharp mandibles, while those specimens which were old and worn in general appearance presented every gradation of bluntness of the mandibles. Communications on this subject, based on observation, would be acceptable to the Cambridge Entomological Club."—*Psyche.*

AMERICAN QUARTERLY MICROSCOPICAL JOURNAL.—For the first time we are inclined to find fault with this new journal. The July number contains several good natural history articles and a variety of interesting notes on aperture, illumination, &c. The portion with which everybody will be disappointed is the announcement that its publication will cease with the present number. This will leave us once more without an American periodical devoted to the publication of elaborate memoirs upon microscopical subjects. The journal has already acquired a character and name too valuable to be lost, and it is to be hoped that the editor and publishers will be induced to reconsider their decision to abandon the enterprise.

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## SCIENTIFIC NEWS.

— We take pride and pleasure in drawing attention to the appreciative manner in which British naturalists testify to the nature of work recently done in this country in ornithological bibliography, and trust that the desired results may be brought about.

*Memorial to Elliott Coues, Esquire, Assistant Surgeon United States Army.*

We, the undersigned, beg leave to express our high appreciation of the "Bibliographical Appendix" to your work, "Birds of the Colorado Valley," being No. 11 of the Miscellaneous Publications of the United States Geological Survey of the Territories, under the charge of Dr. Hayden. And at the same time we wish to place on record our gratitude to that gentleman and to the authorities of the department to which you are attached, for the liberality they have shown in granting you permission to stay at Washington for the completion of this and other important works upon which you have now been so long and so usefully engaged.

The want of indexes to the ever increasing mass of zoölogical literature has long been felt by all workers in every department of that science; but the enormous labor of compilation has hitherto deterred many from undertaking a task so appalling. It is with no small satisfaction that we recognize your readiness to devote yourself to work of this nature. Moreover, we feel justified in hoping that should the installment now published in the volume above named be enlarged in a similar manner so as to include a complete bibliography of ornithology, this branch of science will possess an index to its writings, perhaps more complete as to its scope and contents than any kindred subject of similar extent.

An undertaking of this sort is beset with formidable difficulties; not only is its extent enormous and the works relating to the subject are widely scattered through many libraries, public and private, but the qualifications of a good bibliographer are not easily to be found united in one person. His application and industry must be untiring, and he must be thoroughly conversant with the art of bibliography. In addition to these requirements, in a case like the present, an equally thorough knowledge of the subject under consideration is indispensable. You happily combine all these qualifications; your industry has long been approved, your knowledge of books is evident from what you have now put before us, your knowledge of ornithology has long been known to us. We can well believe that the libraries of your own country are better stored than any others with works relating to the ornithology of North America, and that, therefore, the "List of Faunal Publications relating to North American Ornithology" could be nowhere better prepared than in Washington; but when the ornithological literature of the whole world has to be examined, it seems to us almost indispensable that the older libraries of Europe, and especially of England, France, Italy, Germany and Holland should be consulted if one of the chief merits of your work is to be maintained, viz: The consultation at first hand by yourself of every work mentioned therein.

This brings us to one of the chief objects of this memorial,

which is to express our sincere hope that time and means will be found you to prosecute in Europe the great undertaking you have commenced so well, and bring it to a successful conclusion. Should the authorities who preside over the department to which you belong—and especially the Surgeon-General of the United States Army—who have hitherto so liberally granted you facilities for the scientific work you have performed, be disposed to furnish you with these means of perfecting your undertaking, we are convinced that it will reflect great credit to them and the country to which you belong. We on our part, so far as England is concerned, are ready not only to welcome a brother ornithologist, but also to render you every assistance in our power.

[Signed.]

W. H. Flower, F.R.S., etc., President of the Zoölogical Society of London.
T. H. Huxley, Sec. R.S.
Charles Darwin, F.R.S.
St. Geo. Mivart, F.R.S., Sec. L.S.
Alfred R. Wallace.
A. Günther, F.R.S., Keeper of the Department of Zoölogy, British Museum.
Philip Lutley Sclater, M.A., Ph.Dr., F.R.S., Secretary to the Zoölogical Society of London.
Alfred Newton, F.R.S., V.P.Z.S., Prof. of Zoölogy in the University of Cambridge.
H. B. Tristram, F.R.S.
Osbert Salvin, M.A., F.R.S., Editor of *The Ibis*.
F. Du Cane Godman, Secretary of the British Ornithologists' Union; and twenty-six others.

— Recent arrivals at the Philadelphia Zoölogical Garden: 1 English blackbird (*Turdus merula*); 1 Angora goat (*Capra hircus* var.); 4 barn owls (*Strix flamea americana*); 1 sandhill crane (*Grus canadensis*); 1 ring-necked snake (*Diadophis punctatus*); 2 Virginia deer, twins (*Cervus virginianus*), born in the garden; 2 electrical eels (*Gymnotus electricus*), South America; 2 red-crested cardinals (*Paroaria cucullata*), South America; 14 lizards (*Sceloporus undulatus*); 2 mule deer, twins (*Cervus macrotis*), and 1 fallow deer (*Dama vulgaris*), born in the garden; 7 mandarin ducks (*Aix galericulata*), China; 1 rose-crested cockatoo (*Cacatua moluccensis*); 5 banded rattlesnakes (*Crotalus horridus*); 1 wild cat (*Lynx rufus*); 78 finches of the following species—cutthroat finch (*Amadina fasciata*), spotted munia (*Munia undulata*), Maja finch (*Munia maja*), black-headed finch (*Munia malacca*), sharp-tailed finch (*Munia acuticauda*), amaduvade finch (*Estrelda amaduva*), orange-cheeked finch (*Estrelda melpoda*), bicolored finch (*Amadina bicolor*); 1 elk (*Cervus canadensis*), born in the garden; 2 short-eared owls (*Brachyotus palustris*); 13 opossums (*Didelphys*

*virginiana*), born in the garden; 2 collared peccaries (*Dicotyles torquatus*), born in the garden; 1 common gannet (*Sula bassana*); 1 pine snake (*Pityophis melanoleucus*).

— Phosphorescence appears in the flesh of marine animals along with a gelatinous substance which is formed. With the microscope (according to MM. Bancel and Husson) one finds two kinds of germs; at the surface-cells which no doubt produce this mucous fermentation, and in the mucus very small bacteria. The cells are thought to act like plants, decomposing carbonic acid of the air by day, fixing the carbon and liberating the oxygen in the liquid. By night they liberate carbonic acid, and the germ then lives and causes destruction of the matters round it, condensing oxygen and producing carbonized and phosphorized hydrogen. The hydrogenized products being burnt as they are produced, cause the phosphorescence. The author considers the phosphorescence of the lobster due to a fermentation of the kind referred to.

Apropos of phosphorescence, M. Nuesch records in a recent number of the *Journal de Pharmacie*, some curious observations regarding luminous bacteria in fresh meat. Some pork cutlets he found illuminated his kitchen so that he could read the time on his watch. The butcher who sent the meat told him the phosphorescence was first observed in a cellar where he kept scraps for making sausages. By degrees all his meat became phosphorescent, and fresh meat from distant towns got into the same state. On scratching the surface or wiping it vigorously, the phosphorescence disappears for a time; and the butcher wiped carefully the meat he sent out. All parts of the animal, except the blood, acquired the phenomenon over their whole surface. The meat must be *fresh;* when it ceases to be so, the phosphorescence ceases, and *Bacterium termo* appear. None of the customers had been incommoded. It was remarked that if a small trace of the phosphorescent matter were put at any point on the flesh, of cats, rabbits, &c., the phosphorescence gradually spread out from the center, and in three or four days covered the piece; it disappeared generally on the sixth or seventh day. Cooked meat did not present the phenomenon, but it could be had in a weak manner from cooked albumen or potatoes. No other butcher shop in the place was affected. The author is uncertain whether to attribute the complete disappearance of the phenomenon to the higher temperature of the season, or to phenic acid, or to fumigation with chlorine.—*English Mechanic.*

— In "Notes on *Pterygocera annarice*," by Carl Bovallius (Kgl. Svenska Vet. Akademien Handlingar, Bd. 4, No. 8, 1878), we have a very full account of this interesting form of Amphipod, on which the author bases a new sub-family. The author also gives

in a foot-note a short account of Martinus Slabber, the original describer of the species, which we copy:

"Martinus Slabber was born in 1741, probably at Middleburg. In 1767 we find him elected a member of the Hollandische Maatschappye der Wetenschappen. He was then called 'Bailleuw en Secretaris te Baarland en Bakendorp, en Secretaris te Oudeland.' In 1769 he was a member of 'Zeeuwsch Genootschap der Wetenschappen te Vliessingen. In 1793 keeping the above named charge, he seems to have removed to the town Goës, where we find him in 1807 as 'Raad der Stadt.' He died in Gravenpolden in 1835, aged 94 years. All these places are situated on the isle of Walcheren."

A list of his published works, six in number, is also given. Slabber, we would here note, was the first to figure the zoea of Crustacea.—*J. S. K.*

— Locusts are reported as doing much damage in Southern Russia in June; also swarms of locusts appeared in North-west India, by advices received in London, in April. Swarms of locusts have likewise recently appeared in Armenia; news from Elizabethpol states that both the banks of the river Kur were completely covered with the insects as far as Terter on the one bank, and as far as Akstafa on the other. All vegetation is devastated.

— In a posthumous paper by Frederic Smith it is stated that the general aspect of the Hymenopterous fauna of the Hawaiian islands is North American, with admixture of a few South American forms. The ants are most diverse in character, some being cosmopolitan in range. The house ant of Madeira is common, and the little European ant (*Ponera contracta*) also occurs there.

— The well known British entomologist, Frederick Smith, assistant keeper of the Zoölogical Department, British Museum, London, died Frebuary 16, aged 72.

— Prof. Lawrence Smith has been elected by the French Academy, correspondent in mineralogy, in room of the late Sir Charles Lyell.

— Dr. Page, Prof. of Geology at Durham, died at his residence, Newcastle-on-Tyne, lately. Prof. Page was a voluminous writer on geology and the physical sciences. He was long connected with Messrs. Chambers, of Edinburgh, and many years ago his name was a good deal associated with the scientific basis of the well-known book, "The Vestiges of the Natural History of Creation."

— Prof. Huxley has lately avowed his belief in the fungoid origin of certain diseases, as may be judged by the following extract from a recent address reported in the *English Mechanic*: "The fungi were the greatest destroyers of useless matter. Nature did her best to get rid of this matter. Death was said to

be one of the causes of putrefaction, but this was not quite true, and it would be more correct to say that life was the cause of putrefaction. If they took proper precautions to keep away from any dead body the organisms he had mentioned, it would not putrefy, and the sole cause of that most disagreeable change called putrefaction was the introduction of a particular form of life more analogous to the fungi than anything else, known as Bacteria. It was only lately that they had known much about them. The *Bacterium termo* was not more than a 30,000th part of an inch. If they took a small portion of fluid of putrefying matter they would find millions of them in every drop, darting about as if they were fishes. They multiplied with enormous rapidity, and after a certain period of activity passed into a period of rest, and afterwards the protoplasmic substance broke up, and each spore gave rise to a *Bacillus subtilis* again. Their rate of multiplication was so excessively rapid that it needed only one of these Bacilli to get into a liquid, and in the course of a couple of days the whole of that liquid would be visibly turbid in consequence of the multiplicity of the Bacteria to an extent which no arithmetic could express. The importance of these bodies was that they exerted a fermentative influence, and they did for the fluid what yeast and barm did. It was this fermentative product which gave rise to putrefaction, and if they took such precautions as would keep out the bacteria, a dead body would remain intact for an indefinite period. It was on this principle that meats were preserved for an indefinite period by being partly boiled and then hermetically sealed in tins so as to preclude the air getting in. If they considered what would happen if all the animals that died remained where they died until they dried up, they would see what an important part these Bacteria played, and if they could all be gathered together they would make more than all the rest of the animal and vegetable kingdom. But they had a great significance which it was important they should all understand. In France there was an enormous silk industry, but it sometimes was almost annihilated through the death of the silk-worms, and that was almost always indisputably caused by a fungus. A disease which had all the characteristics of an infectious epidemic resulted in consequence of the germs of the fungi being introduced into the caterpillar, and each one infected became a source of infection, which spread in the same way as infectious diseases were propagated. There was a splenetic fever known in some countries which killed many cattle, and it had been made out that it was caused by these Bacteria. If they inoculated a healthy animal with it, they at once had the symptoms of the splenetic fever. A new disease had been investigated which was very fatal to pigs, which sometimes became epidemic, and which was caused by Bacillus. In vaccine lymph and smallpox there were small minute bodies, and it was found that in these the infection resided, so that they were coming to this conclusion, that the whole of our

great epidemics were of the same nature, and if that were correct there could be few forms of life of more importance than those in the limits of the visible, which he had been describing."

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## PROCEEDINGS OF SCIENTIFIC SOCIETIES.

APPALACHIAN MOUNTAIN CLUB, June 11.—Mr. C. W. Folsom read a paper entitled Notes on elementary surveying for amateurs. Mr. J. B. Henck, Jr., exhibited and described several forms of pedometer, including the five dollar American pedometer.

July 9.—The seventh field meeting convened at the Crawford House, N. H. The meeting was called to order by Prof. William H. Niles, Cambridge, Mass., president of the club. A paper was read by Prof. Charles E. Fay, of Boston, on Mount Carrigan, to the summit of which a path had just been completed by the club. (Members of the club conducted a party from the Institute of Instruction to the summit of Mount Carrigan July 10th.) Prof. Hitchcock, of Dartmouth College, spoke on the geology of the White Mountain Notch. F. V. Hayden, U. S. geologist, spoke on the White and Rocky mountains, and Prof. F. W. Clark, of Cincinnati, on North Carolina and Tennessee mountains and scenery.

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## SELECTED ARTICLES IN SCIENTIFIC SERIALS.

AMERICAN JOURNAL OF SCIENCE AND ARTS.— July. Silurian formations in Central Virginia, by J. L. Campbell. Extinct volcanoes about Lake Mono and their relations to the glacial drift, by J. LeConte. (These volcanoes were active since and probably before the glacial period.) Recent additions to the marine fauna of the eastern coast of North America, by A. E. Verrill. Notice of a new Jurassic mammal, by O. C. Marsh. On the Hudson river age of the Taconic schists, by J. D. Dana.

PSYCHE. — July. Pupation of the Nymphalidæ, by W. H. Patton.

ZOOLOGISCHER ANZEIGER.—June 9. Keller on the embryology of the sponges (Chalina). Benecke on the maturation and fertilization of the eggs of the bats.

THE GEOLOGICAL MAGAZINE.—June, On recently discovered teeth of the musk ox (*Ovibos moschatus*) at Craybow, Kent, by W. Davies. The Glacial period in Eastern America, by C. H. Hitchcock. The Till in New England, by W. Upham.

CANADIAN NATURALIST.—June 23. A Canadian Pterygotus, by J. W. Dawson. Mœbius on *Eozoön canadense*, by J. W. Dawson.